

08/21/2007 TUE 15:18 FAX 5122311411 PDF

RECEIVED
CENTRAL FAX CENTER

003/022

AUG 21 2007

PATENT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Application of: Jessy Rouyer : Paper No.:
Serial No.: 10/674,220 : Group No.: 2609
Filed: September 29, 2003 : Examiner: Andrew W. Chriss
Title: Bridged Network System with Traffic Resiliency Upon Link Failure

Mail Stop Amendment
Commissioner for Patents
P.O Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being transmitted by facsimile on the date shown below to: 571-273-8300 to the Attention of Mail Stop Amendment, Commissioner for Patents, Alexandria, VA 22313 on this the 21st day of August 2007.

Martha Rocha

Print Name

Martha Rocha

Signature

AMENDMENT

Dear Sir/Madam:

This is a response to an Office Action dated May 22, 2007. Applicant requests reconsideration of the above-identified application in view of the amendments and remarks presented herein.

Exhibit No.

A

1

Rouyer

Atty. Docket No. 139165

PATENT

RECEIVED
CENTRAL FAX CENTER

AUG 21 2007

AMENDMENT TO THE CLAIMS

1. (original) A bridged network system, comprising:
a plurality of nodes;
wherein each node in the plurality of nodes is coupled to communicate with at least one other node in the plurality of nodes;
wherein the plurality of nodes comprise a bridge network between external nodes located externally from the plurality of nodes; and
wherein each node of the plurality of nodes is operable to perform the steps of:
receiving a packet, wherein the packet comprises a route indicator field;
responsive to the packet being received prior to a time of failure along a communication link between two of the plurality of nodes, transmitting the packet along a first route in the system to another node in the plurality of nodes; and
responsive to the packet being received after a time of failure along a communication link between two of the plurality of nodes and in response to the route indicator field, transmitting the packet along a second route in the system to another node in the plurality of nodes, wherein the second route differs from the first route and is identified prior to the time of failure.

2. (currently amended) The bridged network system of claim 1 wherein the packet comprises a first packet and wherein each of the plurality of nodes is further operable to perform the steps of:
determining a third route in the system after the time of failure;
receiving a second packet after the first packet; and
transmitting the second packet along the third route to another node in the plurality of nodes.

PATENT

3. (original) The bridged network system of claim 2, and further comprising after the step of receiving the second packet and prior to the step of transmitting the second packet, a step of changing a state of the route indicator field to cause transmission to the third route.

4. (original) The bridged network system of claim 3 wherein the step of transmitting the packet along a first route comprises:

identifying a transmit port in the node that corresponds to a destination address in the packet, wherein the destination address corresponds to a node external from the plurality of nodes; and

transmitting the packet via the transmit port to the first route.

5. (original) The bridged network system of claim 4 wherein the step of transmitting the packet along a third route comprises:

identifying a transmit port in the node that corresponds to a destination address in the packet, wherein the destination address corresponds to a node external from the plurality of nodes; and

transmitting the packet via the transmit port to the third route.

6. (original) The bridged network system of claim 2 wherein the receiving step comprises a node, adjacent to a failure in the first route, receiving the second packet.

7. (original) The bridged network system of claim 1, and further comprising after the step of receiving the second packet and prior to the step of transmitting the second packet, a step of setting a value of a route indicator field in the second packet to cause transmission to either the first or second route.

PATENT

8. (original) The bridged network system of claim 1 wherein the step of transmitting the packet along a second route comprises:

identifying a transmit port in the node that corresponds to a receipt port in the node;
and

transmitting the packet via the transmit port to the second route.

9. (original) The bridged network system of claim 8 wherein the transmitting step is not responsive to a destination address within the packet.

10. (original) The bridged network system of claim 1 wherein multiple ones of the plurality of nodes are operable to receive and transmit the packet along the second route until the packet reaches an egress node in the plurality of nodes.

11. (original) The bridged network system of claim 10 wherein the transmission by each node in the multiples ones of the plurality of nodes:

identifying a transmit port in the node that corresponds to a receipt port in the node;
and

transmitting the packet via the transmit port to the second route.

12. (original) The bridged network system of claim 1:

wherein a first node in the plurality of nodes that receives a packet from a first external node of the external nodes located externally from the plurality of nodes comprises an ingress node;

wherein a second node in the plurality of nodes that is coupled to communicate the packet to a second external node of the external nodes located externally from the plurality of nodes comprises an egress node; and

PATENT

further comprising a step of, responsive to a node in the plurality of nodes receiving a packet as an ingress node, inserting an address of the ingress node and the egress node into the packet.

13. (original) The bridged network system of claim 12:

wherein the step of transmitting the packet along either the first route or the second route comprises:

identifying a transmit port in the node that corresponds to the address of the egress node in the packet; and

transmitting the packet via the transmit port to either the first or second route.

14. (original) The bridged network system of claim 13 wherein the step of transmitting the packet along either the first route or the second route is further responsive to the route indicator field in the packet to cause transmission to either the first route or the second route, respectively.

15. (original) The bridged network system of claim 14 wherein the packet further comprises a field for indicating allowability of an ingress node or a node adjacent a failure to change a state in the route indicator field.

16. (original) The bridged network system of claim 12 wherein the first route and the second route are routes in a plurality of different routes, wherein each route in the plurality of different routes is identified prior to the time of failure.

17. (original) The bridged network system of claim 16 wherein each route in the plurality of different routes is identified by a corresponding and different value in the route indicator field.

PATENT

18. (original) The bridged network system of claim 16 wherein the packet further comprises a VLAN identifier field operable to identify each different route in the plurality of routes so as to facilitate a broadcast message to all nodes on an identified route.

19. (original) The bridged network system of claim 18 wherein the VLAN identifier field facilitates registration of selected different routes in the plurality of routes.

20. (original) The bridged network system of claim 16 wherein the packet comprises a first packet and wherein each node of the plurality of nodes is further operable to perform the steps of:

determining a third route in the system after the time of failure;

receiving a second packet after the first packet; and

transmitting the second packet along the third route to another node in the plurality of nodes.

21. (original) A bridged network system, comprising:

a plurality of nodes;

wherein each node in the plurality of nodes is coupled to bi-directionally communicate with at least one other node in the plurality of nodes;

wherein the plurality of nodes comprise a bridge network between external nodes located externally from the plurality of nodes; and

wherein each node of the plurality of nodes is operable to perform the steps of:

receiving a packet;

responsive to the packet being received prior to a time of failure along a communication link between two of the plurality of nodes, transmitting the packet along a first route in the system to another node in the plurality of nodes; and

responsive to the packet being received after a time of failure along a communication link between two of the plurality of nodes and in response to an indication

PATENT

in a broadcast message received prior to the step of receiving a packet, transmitting the packet along a second route in the system to another node in the plurality of nodes, wherein the second route differs from the first route and is identified prior to the time of failure and in response to the broadcast message indication.

AUG 21 2007

PATENT

REMARKS

This Application has been carefully reviewed in light of the Office Action mailed May 22, 2007. At the time of this Office Action, Claims 1-21 were pending. In order to advance prosecution of this case, Claim 2 has been amended as suggested by the Examiner. It is believed that the amended claim does not involve any introduction of new matter or any substantive revisions, whereby entry is believed to be in order and is respectfully requested. The Applicant respectfully requests reconsideration and favorable action in this case.

The May 22, 2007 Office Action raised the following issues: (I) Claim 2 was objected to due to an informality; (II) Claims 1-21 were rejected under 35 U.S.C. § 103(a).

I. Objection to the Claims

Claim 2 has been amended to overcome the objection that it was written in independent form when it actually depends from Claim 1. No new matter has been added to the claim during amendment. Accordingly, Applicant respectfully requests the Examiner withdraw the objection in view of the amendment made herein to Claim 2.

II. Rejection of Claims 1-21 Under 35 U.S.C. § 103(a)**A. Claims 1 and 8-11**

PATENT

The Office has rejected Claims 1 and 8-11 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 7,061,876 ("Ambe") in view of United States Patent No. 6,970,471 ("Doverspike"). However, Claim 1 is patentable under 35 U.S.C. 103(a) over Ambe and Doverspike because it recites structure not present in the cited references, and therefore distinguishes physically over those references. Accordingly, Claims 8-11, along with all other claims that depend directly or indirectly from Claim 1, are also allowable.

Claim 1 distinguishes over the Ambe and Doverspike references because it claims "receiving a packet, wherein the packet comprises a route indicator field" and "responsive to the packet being received after a time of failure along a communication link between two of a plurality of nodes and in response to the route indicator field, transmitting the packet along a second route in the system to another node in the plurality of the nodes"-features not disclosed in either reference.

In describing these limitations involving a route indicator field, the application states in relevant part:

Figure 2 illustrates a packet format 20 according to a preferred embodiment and for use in connection with system 10 of Figure 1a. Packet format 20 includes various fields as known in the Ethernet art, and only some of which are shown by way of example. These fields include a source address field 20₁, a destination address field 20₂, a length field 20₃ and a data payload field 20₄. Other fields, although not shown, may be included as also known in the art, such as a preamble and a packet (or frame) start field. According to the preferred embodiment, however, packet format 20 includes an additional field 20₅, referred to hereafter as a link type field 20₅. Link type field 20₅ is so named because, as shown below, the state of the field indicates the type of link on to which the packet is routed, with one state in field 20₅

PATENT

(e.g., 0) indicating a spanning tree link and another state in field 20₅ (e.g., 1) indicating a bypass link along system 10. In the preferred embodiment, link type field 20₅ is a one-bit field and it is contemplated that it could be a bit provided as an addition to existing Ethernet frames or, alternatively, it could be a bit that is already in the Ethernet frame yet where the function of that bit is changed to be consistent with the functionality described in this document as relating to link type field 20₅.

See Patent Application, p. 9

The Application further states:

When a failure occurs in a link in system 10, that failure is detected according to known protocols. However, as an enhancement in a preferred embodiment, in response to the failure detection, a node within system 10 changes the state of link type field 20₅ so that each packet so changed will be routed along a bypass link, where recall by way of example that a binary value of 1 in link type field 20₅ causes this effect. Further, when a node within system 10 receives a packet with a binary value of 1 in its link type field 20₅, the receiving node does not consult its forwarding table for purposes of further routing the received packet, but instead it consults its bypass table to determine the next route for the received packet.

See Patent Application, p. 11

The route indicator field is further defined by Applicant as follows:

In system 10, the route indicator field is a link type field 20₅, operable to indicate that the packet is to continue along a spanning tree route or a bypass route. In system 10', the route indicator field is a link set field 20'₃, operable to indicate that the packet is to continue along a first set of links forming a first route, a second set of links forming a second route, and so forth for up to 2^M sets of links corresponding to a respective number of 2^M routes.

PATENT

See Patent Application, p. 26. In contrast, the Ambe and Doverspike references do not disclose a route indicator field. Instead, they rely on the very type of routing that Applicant is trying to improve. With regard to the prior art, Applicant stated:

If system 10 were implemented according to the prior art, then upon a failure of one of the links in Figure 1a, then a dynamic and automated technique is performed whereby a new spanning tree is defined among its various nodes. Particularly, in such a case, additional control messages are communicated among the various nodes so as to identify the failed link and to establish a new spanning tree. During this transition time, each node is required to flush information out of its respective forwarding table, and in response to the new control messages each forwarding table is re-built, which is sometimes referred to as a re-learn procedure. When the forwarding table is complete for each node, the system is said to have re-converged to a new spanning tree. As discussed earlier in the Background Of The Invention section of this document, however, this procedure takes time, and in some implementations may be disadvantageous or even prohibitive. Accordingly, the following discussion demonstrates how system 10, according to one preferred embodiment, provides an alternative manner of responding to a link failure and that improves upon drawbacks of the current state of the art.

See Patent Application, p. 8. Both the Ambe and Doverspike patents involve this type of prior art rather than the use of a route indicator field that includes a link type field. As the Examiner notes, Ambe does not utilize a route indicator field in the packet to route traffic but uses the MAC address list as well known in the art. Ambe states with regard to routing:

Firstly, the spanning tree table 1 shown in FIG. 4 is a table prepared for each of the switches B1-B5 shown in FIG. 2 by preliminary and automatic learning. In the example of FIG.

PATENT

2, identifiers (ID) "1"- "5" are assigned to five spanning trees, and an identifier and an MAC address of a root switch for each spanning tree are prescribed. All of the operation states thereof are made "active", and which spanning tree is the default spanning tree is shown.

See Ambe, column 4, lines 48-55. Applicant states on page 10 of the application with regard to MAC addresses:

For reasons further discussed later, given such an association, if the node receives a packet of one of these two associated ports and the packet is indicated to be routed via a bypass link, then the packet is then transmitted by the node out of the other and associated node, without reference to the destination MAC address in the packet. In the current example, therefore, and unlike the prior art forwarding table used in a spanning tree network and which associates an outgoing port with an in-packet destination MAC address, in the preferred embodiment the bypass table associates two ports at the same node.

Doverspike also does not reroute traffic after a time of failure "in response to the route indicator field." Rather, it uses the well-known technology that Applicant notes is time-consuming and requires extensive use of control messages. Doverspike states:

As discussed above, in the event one of the communication nodes 202-208 or transmission lines 250-256 along the normal communication path fails or is determined to have an unacceptable error condition, the optical mesh network 130 can self-repair by establishing a restoration communication path. In the exemplary mesh network 130, *the restoration path is established by one of the end nodes 200 or 208 transmitting commands to other nodes 200-218 instructing them to reconfigure themselves to form the restoration path.* [emphasis added].

PATENT

See Doverspike, column 4, lines 39-48. Because the structure disclosed in the Ambe and Doverspike references are not intended to or capable of providing the functionality provided by Claim 1 because they do not include the link type field in their alleged equivalent of a route indicator field, Applicant respectfully requests that the Examiner withdraw this rejection.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claims 1 and 8-11.

B. Claims 2-5 and 7

The Office has rejected Claims 2-5 and 7 under 35 U.S.C. § 103(a) as being unpatentable over Ambe in view of Doverspike, as applied to Claim 1, and further in view of U.S. Patent No. 5,796,740 ("Perlman"). However, Claim 1 is patentable under 35 U.S.C. 103(a) over Ambe and Doverspike because it recites structure not present in the cited references as previously discussed, and therefore distinguishes physically over those references. Accordingly, Claims 2-5 and 7, depending from Claim 1 either directly or indirectly, are also allowable.

Claims 3-5 are also allowable over Perlman because Perlman does not teach "after the step of receiving the second packet and prior to the step of transmitting the second packet, a step of changing a state of the route indicator field to cause transmission to the third route." Perlman does not utilize a route indicator field having a link type field as discussed in the Application. Examiner contends that Perlman teaches writing a data link

PATENT

address into data link destination address field of subsequent packets (which would include a second packet) transmitted to said receiving end station" but provides no citation to the Perlman patent. *See* Office Action, p.5. Regardless, this procedure is not the same as changing the state of the route indicator field, which includes a link type field not present in Perlman, as required by the present application.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claims 2-5 and Claim 7.

C. Claim 6

The Office has rejected Claim 6 under 35 U.S.C. § 103(a) as being unpatentable over Ambe in view of Doverspike and Perlman, as applied to Claim 2, and further in view of U.S. Patent No. 6,154,448 ("Petersen"). However, Claim 2 is patentable under 35 U.S.C. 103(a) over Ambe, Doverspike and Perlman because it recites structure not present in the cited references as previously discussed, and therefore distinguishes physically over those references. Accordingly, Claim 6, depending from amended Claim 2, which in turn depends from Claim 1, is also allowable.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claim 6.

D. Claims 12-14, 16 and 17

PATENT

The Office has rejected Claims 12-14, 16 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Ambe in view of Doverspike, as applied to Claim 1, and further in view of U.S. Patent No. 6,915,445 ("Navar"). However, Claim 1 is patentable under 35 U.S.C. 103(a) over Ambe and Doverspike because it recites structure not present in the cited references as previously discussed, and therefore distinguishes physically over those references. Accordingly, Claims 12-14, 16 and 17, depending from Claim 1 either directly or indirectly, are also allowable.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claims 12-14, 16 and 17.

E. Claim 15

The Office has rejected Claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Ambe in view of Doverspike and Navar, as applied to Claim 14, and further in view of U.S. Patent No. 7,031,321 ("Habetha"). However, Claim 14 is patentable under 35 U.S.C. 103(a) over Ambe, Doverspike and Navar because it recites structure not present in the cited references as previously discussed, and therefore distinguishes physically over those references. Accordingly, Claim 15, which ultimately depends from Claim 1, is also allowable.

Claim 15 is also allowable because Habetha does not include the limitation that "the packet further comprises a field for indicating allowability of an ingress node or a node adjacent a failure to change a state in the route indicator field." The UPDATE TRIGGER

PATENT

message of Habetha merely utilizes the recognized prior art that requires each node to flush information out of its respective forwarding tables, and in response to the new control message rebuild each forwarding table rather than utilizing a route indicator field having a link type field as disclosed in the present application.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claim 15.

F. Claims 18-19

The Office has rejected Claims 18-19 under 35 U.S.C. § 103(a) as being unpatentable over Ambe in view of Doverspike and Navar, as applied to Claim 16, and further in view of U.S. Patent No. 6,950,431 ("Nozaki"). However, Claim 16 is patentable under 35 U.S.C. 103(a) over Ambe, Doverspike and Navar because it recites structure not present in the cited references as previously discussed, and therefore distinguishes physically over those references. Accordingly, Claims 18-19, which ultimately depend from Claim 1, are also allowable.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claims 18-19.

G. Claim 20

The Office has rejected Claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Ambe in view of Doverspike and Navar, as applied to Claim 16, and further in view

PATENT

of Perlman. However, Claim 20 is patentable under 35 U.S.C. 103(a) over Ambe, Doverspike and Navar because it recites structure not present in the cited references as previously discussed, and therefore distinguishes physically over those references. Accordingly, Claim 20, which ultimately depends from Claim 1, is also allowable.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claim 20.

H. Claim 21

The Office has rejected Claim 20 under 35 U.S.C. § 103(a) as being unpatentable over Ambe in view of U.S. Patent No. 6,163,525 ("Bentall"). However, Claim 21 is patentable under 35 U.S.C. 103(a) over this prior art for the same reasons Claim 1 was patentable, as it recites structure not present in the cited references as previously discussed, and therefore distinguishes physically over those references. Just as Claim 1 requires a route indicator field with a link type field so does Claim 21 through the limitation of a packet which implicitly requires a route indicator field having a link type field in the present invention.

Applicant respectfully requests the Examiner withdraw the rejection and allow pending Claim 21.

Even if, *arguendo*, the prior art cited contained the limitations of each of Claims 1-21, there still has not been a showing that these combinations would have been made by

PATENT

one skilled in the art. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

In *In Re Fine*, the claims were directed to a system for detecting and measuring minute quantities on nitrogen compounds comprising a gas chromatograph, a converter which converts nitrogen compounds into nitric oxide by combustion, and a nitric oxide detector. The primary reference disclosed a system for monitoring sulfur compounds comprising a chromatograph, combustion means, and a detector, and the secondary reference taught nitric oxide detectors. The examiner and Board asserted that it would have been within the skill of the art to substitute one type of detector for another in the system of the primary reference, however, the court found there was no support or explanation for this conclusion and reversed. *See id.*

Here, there simply is no motivation or teaching found in the prior art to combine the allegedly well-known elements of Ambe and the teachings of Doverspike or any of the other references for that matter. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *See In re Mills*, 916 F.2d 680 (Fed. Cir. 1990); MPEP 2143.01. Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the

PATENT

reference to do so.” See *In re Mills*, 916 F.2d at 682; MPEP 2143.01. No suggestion to combine the technologies therein has been cited or exists. “A statement that modifications of the prior art to meet the claimed invention would have been “ ‘well within the ordinary skill of the art’ at the time the claimed invention was made’ ” because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. See *Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993); MPEP 2143.01.

Furthermore, secondary considerations of non-obviousness such as long felt but unsolved needs also must be considered in determining whether the combination of references renders Applicant’s invention obvious. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). One of the problems Applicant attempts to solve-providing an efficient means for switching traffic to a pre-identified route upon a link failure in a bridged network system-has existed for a long time as discussed in the application. Despite the alleged existence of the various references filed between 1997 and 2002, no efficient solution along the lines disclosed in the present application has ever been implemented as of 2007.

For all of the foregoing reasons, Applicant respectfully requests that Examiner withdraw its rejection of Claims 1-21.

RECEIVED
CENTRAL FAX CENTER

08/21/2007 TUE 15:25 FAX 5122311411 PDF

022/022

AUG 21 2007

PATENT

CONCLUSION

Applicant has made an earnest attempt to place this case in condition for allowance. For the foregoing reasons and for reasons clearly apparent, Applicant respectfully requests full allowance of all pending claims. If there are any matters that can be discussed by telephone to further the prosecution of this Application, Applicant invites the Examiner to contact the undersigned attorney at 512-306-8533 at the Examiner's convenience.

Respectfully submitted,

By: 

Raymond M. Galasso
Reg. No. 37,832

Galasso & Associates, LP
P.O. Box 26503
Austin, Texas 78755-0503
Telephone: (512) 306-8533
Facsimile: (512) 306-8559